Mars Sample Return Architecture Planning

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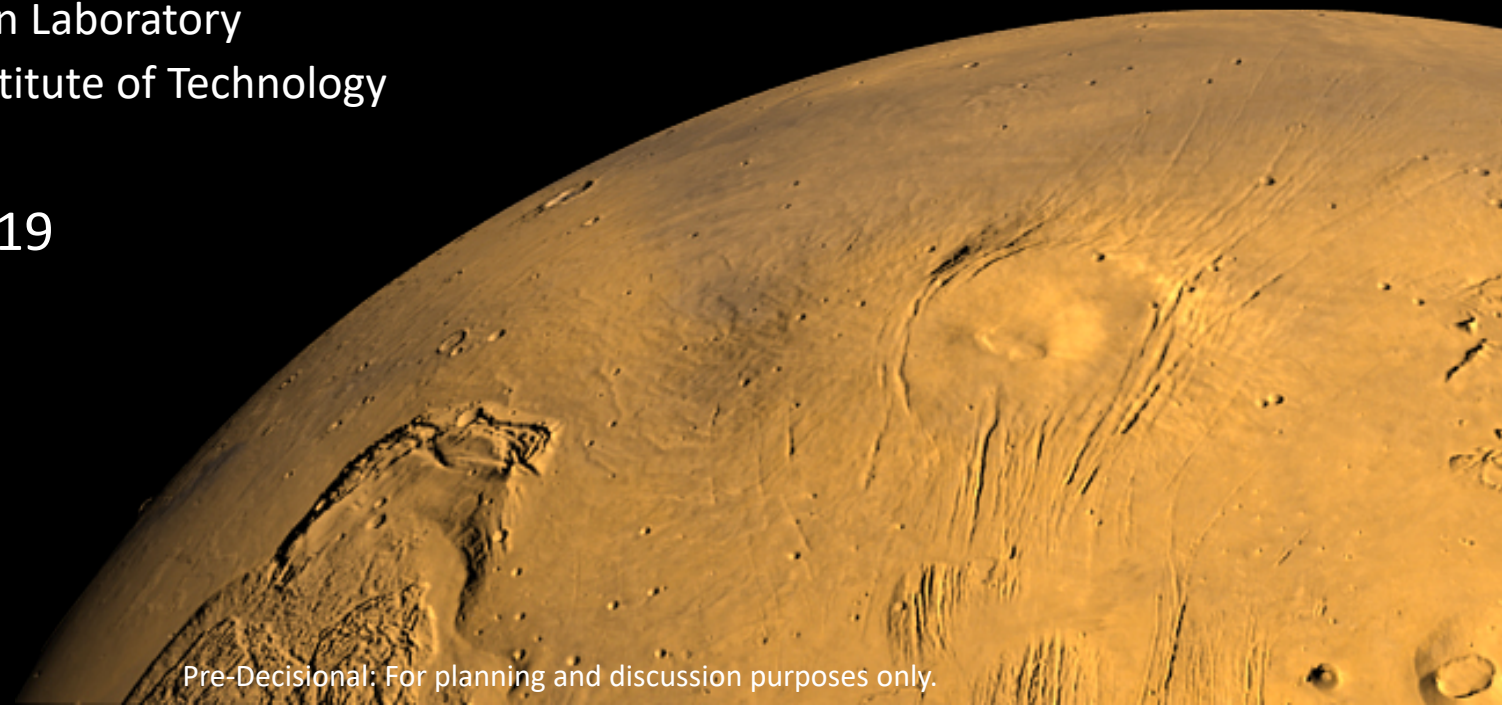
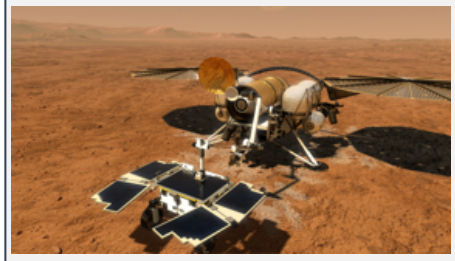


Notional Mars Sample Return Architecture

- Mars 2020 could represent the first step in a Mars Sample Return campaign, acquiring and caching a scientifically selected set of Martian samples
- NASA and ESA are now jointly studying the follow-on flight elements that would return those samples to Earth

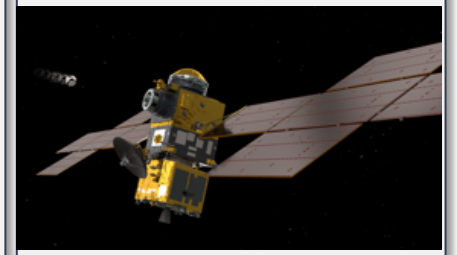
Sample Caching Rover (Mars 2020) Operations

- *Sample acquisition/caching*
- *Sample (subset) delivery*



Sample Retrieval Lander

- *Fetch Rover*
- *Orbiting Sample (OS) container*
- *Mars Ascent Vehicle*



Earth Return Orbiter

- *Capture/Containment System*
- *Earth Return Vehicle*

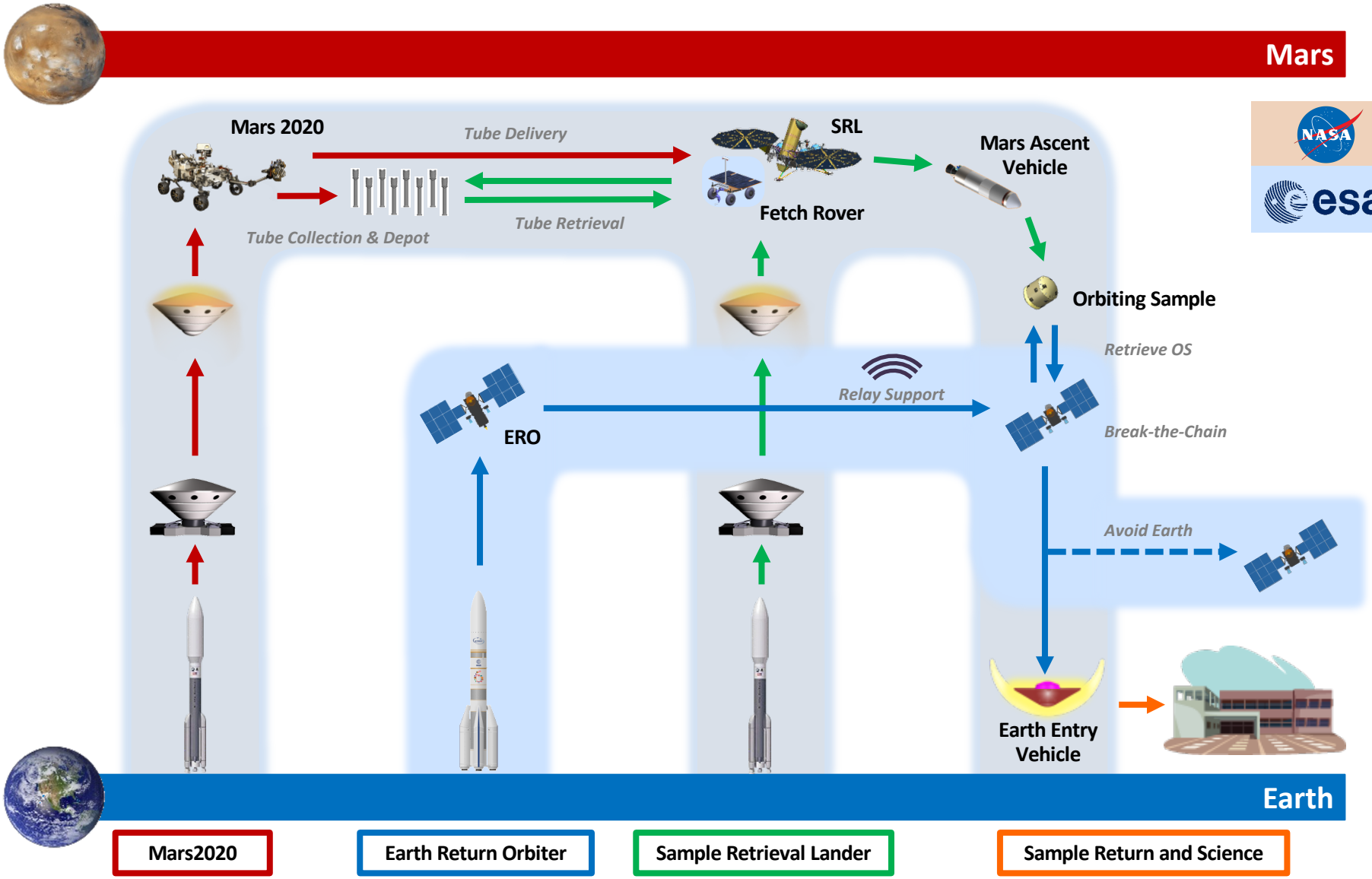
Mars Returned Sample Handling

- *Sample Receiving Facility*
- *Curation*
- *Sample science investigations*

Flight Elements

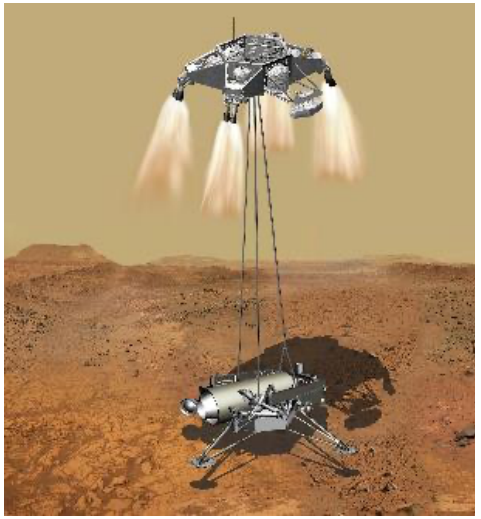
Ground Element

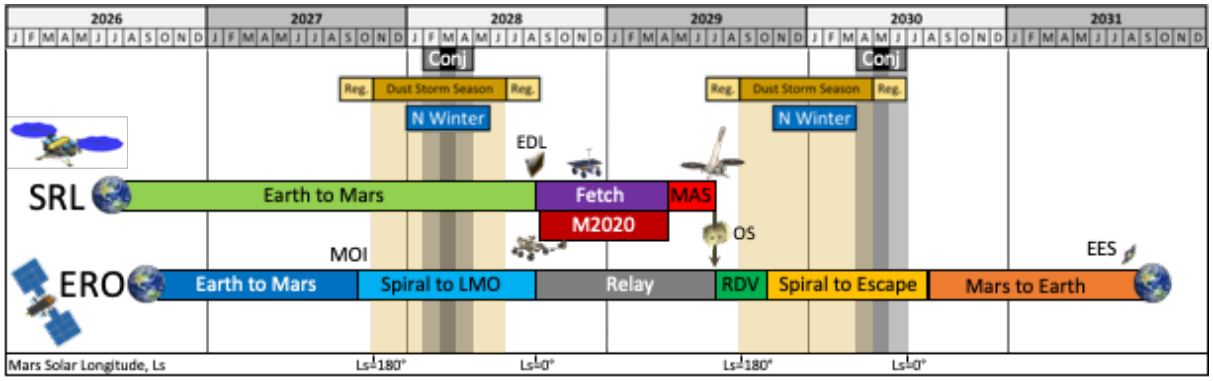
MSR Concept of Operations



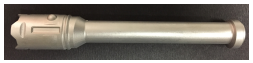
Sample Retrieval Lander Concept

- NASA is leading studies of a Sample Retrieval Lander mission
  - SRL would be responsible for retrieving Mars 2020 samples and launching them into a stable Mars orbit
  - Currently evaluating Propulsive Platform Lander and Skycrane landing concepts
  - Mission design allows surface mission during Martian spring/summer at the Jezero landing site, enabling solar-powered designs

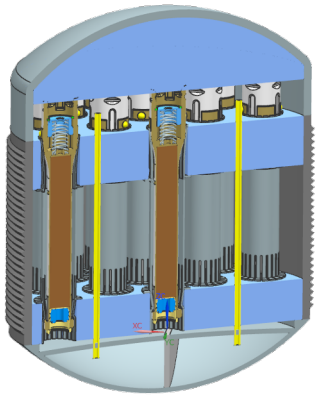




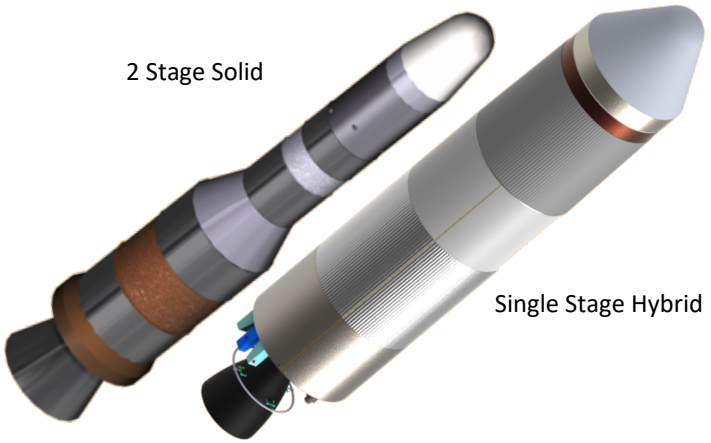
Key SRL Conceptual Mission Elements



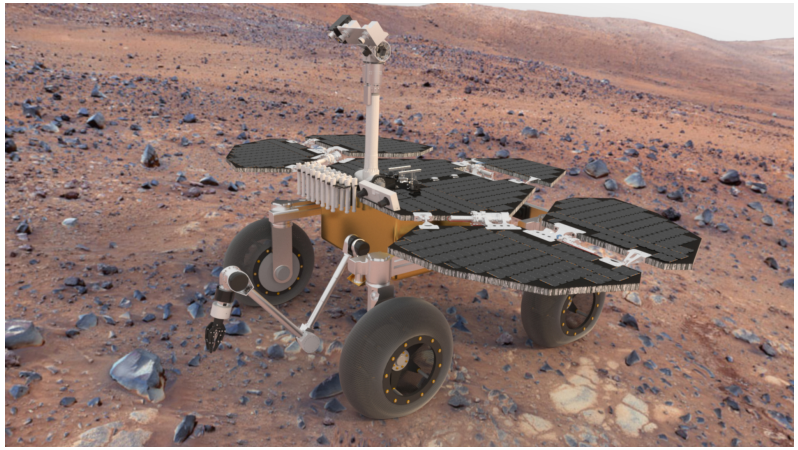
Returnable Sample Tube Assembly



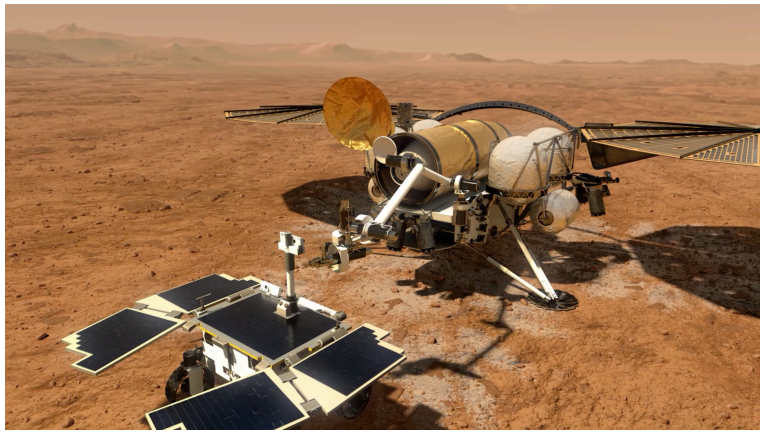
Orbiting Sample Container



Mars Ascent Vehicle



Sample Fetch Rover



SRL Sample Transfer Arm